

LOUISIANA DEPARTMENT OF WILDLIFE & FISHERIES



**OFFICE OF FISHERIES
INLAND FISHERIES SECTION**

PART VI -B

WATERBODY MANAGEMENT PLAN SERIES

**LAKE VERRET, GRASSY LAKE, LAKE
PALOURDE**

**WATERBODY EVALUATION &
RECOMMENDATIONS**

CHRONOLOGY

DOCUMENT SCHEDULED TO BE UPDATED ANNUALLY

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WATERBODY EVALUATION

STRATEGY STATEMENT

Recreational

Recreational fish species are managed to maintain a sustainable population while providing anglers the opportunity to catch or harvest numbers of fish.

Commercial

Commercial fish species are managed to provide sustainable populations.

Species of Special Concern

Species of special concern are managed toward viable, self-sustaining populations.

EXISTING HARVEST REGULATIONS

Recreational

All statewide regulations are in effect for all species, see link below:

<http://www.wlf.louisiana.gov/fishing/regulations>

Commercial

All statewide regulations apply to commercial fish species, see link below:

<http://www.wlf.louisiana.gov/fishing/regulations>

Commercial fishing gear

Title 56

§322.1. Shad seine; commercial harvest of shad and skipjack herring

- A. A commercial fisherman licensed in accordance with R.S. 56:303 and 305(B)(16) may take shad, skipjack, and any other freshwater commercial fish of legal size with a shad seine in accordance with this Section.
- B. Only shad (*Dorosoma* spp.), skipjack herring (*Alosa chrysochloris*), hereafter in this Section referred to as skipjack, and any other legal-sized freshwater commercial fish may be taken with a shad seine; all other fish shall be immediately returned to waters from which they were caught. All fish on board the vessel shall have the head and caudal fin intact.
- C.(1) A shad seine shall be a seine with a mesh size not less than one-inch bar and two inches stretched and not more than two-inch bar and four inches stretched. A shad seine may not be constructed of monofilament.
- (2) Each shad seine shall have affixed to each end a one-gallon jug, painted international orange and marked in black lettering the words "Shad Seine", and waterproof tags with the name and license number of the fisherman in accordance with R.S. 56:320(F).
- D. *Repealed by Acts 2008, No. 24, §2.*
- E. Only strike fishing is authorized by this Section.
- F. The following acts are prohibited:
 - (1) The use of more than one shad seine by a licensee.
 - (2) The use of more than one seine per vessel.
 - (3) The use of a shad seine by more than two vessels at one time.

- (4) The use of a shad seine in a manner that unduly restricts navigation of other vessels or interferes with commercial shipping.
 - (5) Leaving a shad seine unattended or not actively fishing it while it is in the water.
 - G. A shad seine may only be fished in the freshwater areas of the state, but it shall not be used in the bodies of water where seine use is prohibited nor the Pearl River or the Pearl River navigational canal.
 - H. There shall be no daily take or possession limit for the commercial harvest of shad and skipjack taken under the provisions of this Section by properly licensed shad seine commercial fishermen.
 - I. Violation of any of the provisions of this Section, except for Paragraph (F)(4) and Subsection G, constitutes a class four violation. Violation of Paragraph (F)(4) constitutes a class three violation. Violation of Subsection G constitutes a class two violation.
- Acts 2003, No. 274, §1; Acts 2004, No. 86, §1, eff. May 28, 2004; Acts 2008, No. 24, §§1, 2.*

§322.2. Shad gill nets; commercial harvest of shad and skipjack herring

- A. A commercial fisherman licensed in accordance with R.S. 56:303 and 305(B)(4)(f) may take shad and skipjack with a shad gill net in Lake Palourde, Lake Verret, Lac Des Allemands, all of the waterways in Iberville Parish, and those portions of the parishes of Iberia, St. Martin, and St. Mary located between the guide levees of the Atchafalaya Basin but is specifically not authorized to do so in the streams, bayous, canals, and other water bodies connected with the specified lakes.
- B. Shad gill nets shall be used only to take shad (*Dorosoma* spp) and skipjack herring (*Alosa chrysochloris*), hereafter in this Section referred to as skipjack. However, a commercial fisherman may keep other commercial fish species up to a maximum of twenty-five fish. All fish on board the vessel shall have the head and caudal fin intact.
- C.(1) A shad gill net shall be a gill net with a mesh size not less than one-inch bar and two inches stretched and not more than two-inch bar and four inches stretched.
- (2) Each shad gill net shall have affixed to each end a one- gallon jug, painted international orange and marked in black lettering the words "Shad Gill Net", and waterproof tags with the name and license number of the fisherman in accordance with R.S. 56:320(F).
- (3) Each shad gill net shall be placed at least fifty feet from the tree line.
- D.(1) The closed season for commercially harvesting shad and skipjack as provided for in this Section shall include the months of July, August, September, and October of each year. Shad and skipjack may be taken after sunset and before sunrise during open season. However, there shall be no commercial taking of shad or skipjack on any Saturday or Sunday.
- (2) During the open season, there shall be no daily take or possession limit for the commercial harvest of shad and skipjack by properly licensed shad gill net commercial fishermen.
- E. Only strike fishing is authorized by this Section. Once deployed, the shad gill net shall remain stationary until fish are being removed from the net or the net is being retrieved from the water.
- F. The following acts are prohibited:
 - (1) The use of more than one shad gill net by a licensee.
 - (2) The use of more than one gill net per vessel.
 - (3) The use of a shad gill net by more than two vessels at one time.
 - (4) The use of a shad gill net in a manner that unduly restricts navigation of other vessels.
 - (5) Leaving a shad gill net unattended or not actively fishing it while it is in the water.
- G. Repealed by Acts 2010, No. 589, §2.

H. Violation of any of the provisions of this Section, except for Paragraphs (C)(2) and (F)(4), constitutes a class four violation. Violation of Paragraph (C)(2) or (F)(4) constitutes a class three violation.

I. Repealed by Acts 2010, No. 589, §2.

Acts 2003, No. 379, §1; Acts 2004, No. 825, §1; Acts 2006, No. 419, §1; Acts 2008, No. 24, §1; Acts 2010, No. 589, §§1, 2

Species of Special Concern

Paddlefish (*Polyodon spathula*) – No commercial harvest. Recreational harvest - 30” maximum lower jaw fork length limit, 2 per person.

SPECIES EVALUATION

Recreational

Largemouth bass (*Micropterus salmoides*, *M. floridanus*, and *M. salmoides x floridanus* hybrids) are targeted for evaluation since they are a species indicative of the overall fish population due to their high position in the food chain and because they are highly sought after by anglers. Electrofishing is the best indicator of largemouth bass abundance and size distribution, with the exception of large fish.

Largemouth bass

Relative abundance, size distribution, structural indices, and relative weight- Spring electrofishing results indicate that the Lake Verret, Grassy Lake and Lake Palourde complex has the potential to produce quality bass available for harvest. However, naturally occurring events have decreased the abundance of bass and number of quality bass. Hurricanes have had the greatest documented impact on bass in the system. The storms created water quality conditions, such as low dissolved oxygen, that resulted in major fish kills. The two years following Hurricanes Andrew (1992), Gustav (2008) and Ike (2008), the mean total CPUE for largemouth bass rebounded steadily (Figure 1). Stock-size fish rebounded in the spring of 1994 and from the springs of 2008 to 2010, while quality-size fish increased slightly following 1994 and 2010.

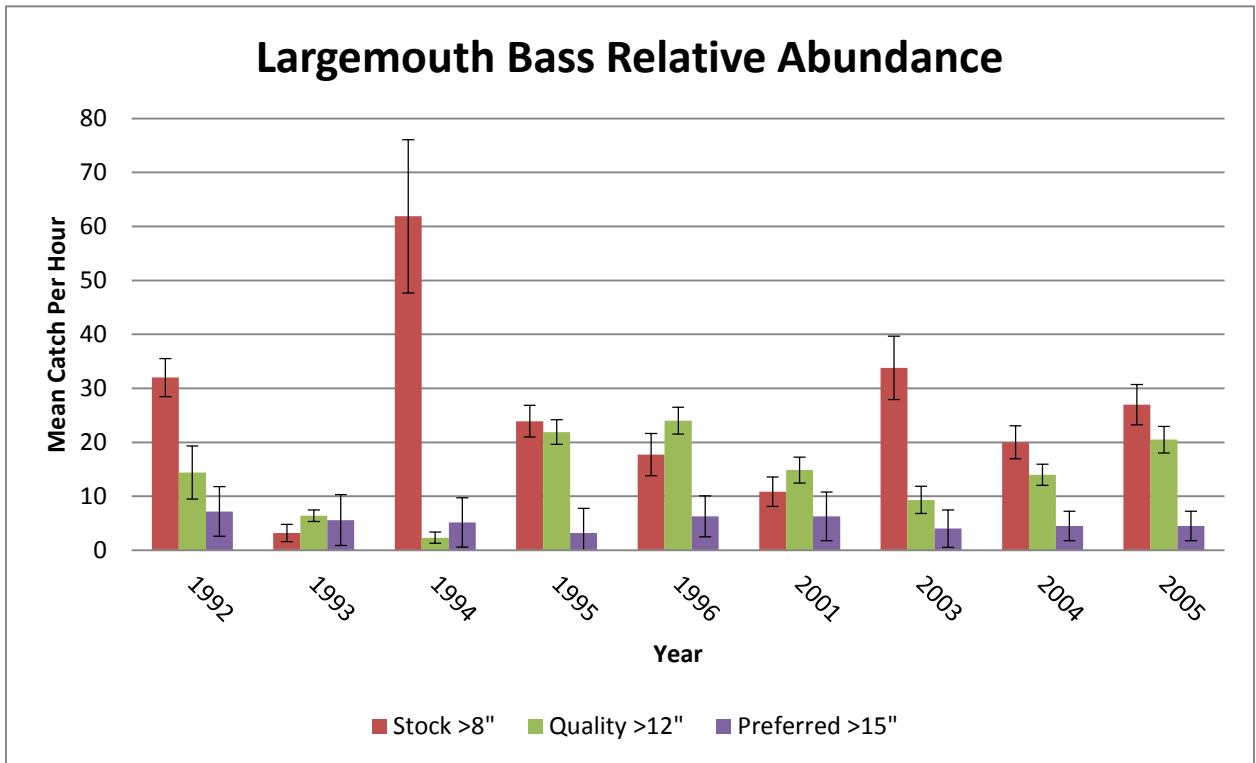


Figure 1. The mean CPUE (\pm 95% CI) for largemouth bass from spring electrofishing results of stock-, quality-, and preferred-size largemouth bass in the Lake Verret, Grassy Lake and Lake Palourde complex, LA, from 1992 to 2005. Error bars represent 95% confidence limits of the mean CPUE.

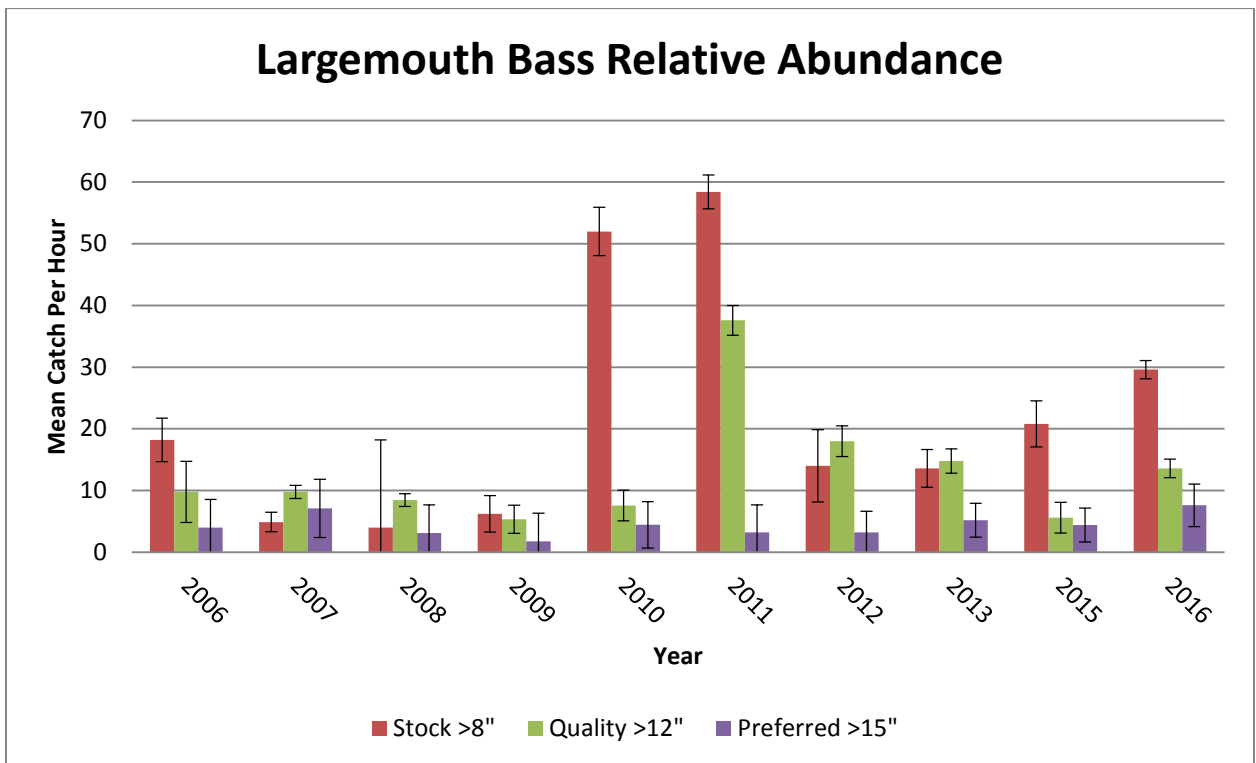


Figure 2. The mean CPUE (\pm 95% CI) for largemouth bass from spring electrofishing results of stock-, quality-, and preferred-size largemouth bass in the Lake Verret, Grassy Lake and Lake Palourde complex, LA, from 2006 to 2016. Error bars represent 95% confidence limits of the mean CPUE.

Proportional stock density (PSD) and relative stock density (RSD) are indices used to numerically describe length-frequency data. Proportional stock density compares the number of fish of quality-size [greater than 12 inches total length (TL) for largemouth bass] to the number of bass of stock-size (8 inches in TL). The PSD is expressed as a percent. A fish population with a high PSD has a higher frequency of larger individuals. A population with a low PSD has a higher frequency of smaller fish. For example, Figure 2 below indicates a PSD of 76 for 2007. The number indicates that 76% of the bass stock (fish over 8 inches) in the sample was at least 12 inches or longer.

$$\text{PSD} = \frac{\text{Number of bass} > 12 \text{ inches}}{\text{Number of bass} > 8 \text{ inches}} \times 100$$

Relative stock density (RSD) is the proportion of largemouth bass in a stock (fish over 8 inches) that are 15 inches (preferred-size) or longer.

$$\text{RSD} = \frac{\text{Number of bass} > 15 \text{ inches}}{\text{Number of bass} > 8 \text{ inches}} \times 100$$

Although there were increases in the overall mean CPUE's following 2007, the size-structure indices for largemouth bass decreased in proportion of quality-size and preferred-size fish from 2007 through 2010, but have been increasing in recent years (Figure 2).

The size distribution comparison (length frequencies) from 2010 to 2016 spring electrofishing results indicates that in 2010 and 2011, there were more stock-sized and quality-sized inch groups represented than in any subsequent year (Figure 3). Length frequencies from 2010 to 2016 samples also indicate that a majority of the fish collected are below 14 inches.

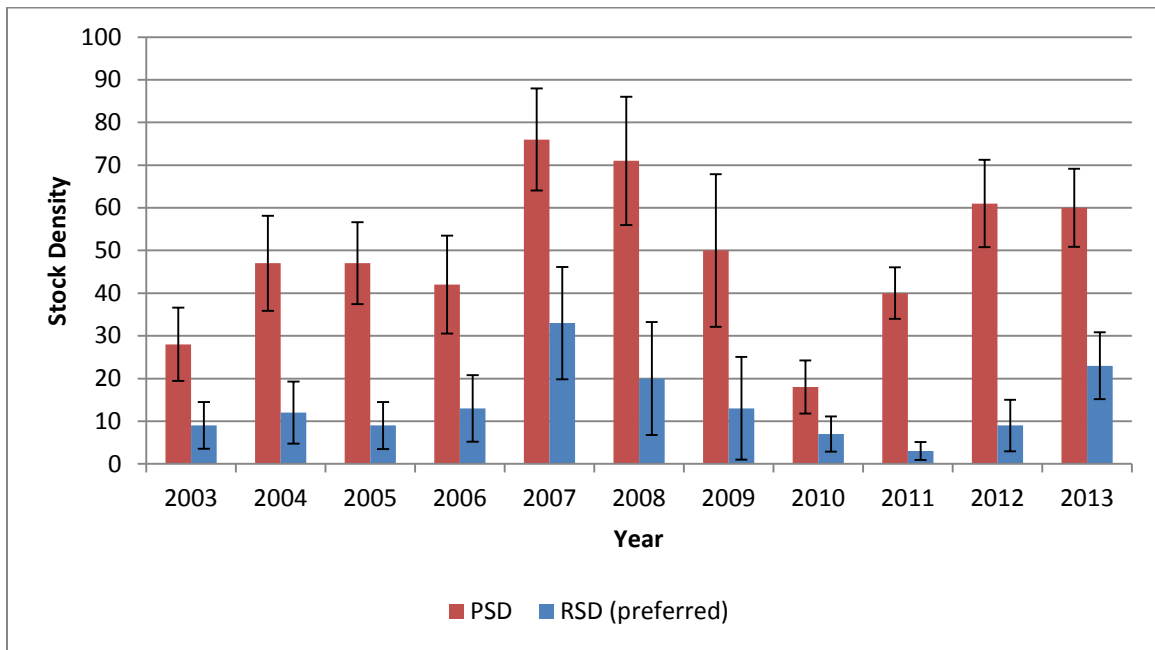


Figure 3. The mean size-structure indices (PSD and RSDp) for largemouth bass from fall electrofishing results in the Lake Verret, Grassy Lake and Lake Palourde Complex, LA, from 2003 to 2013. Error bars represent 95% confidence limits of the mean size-structure indices.

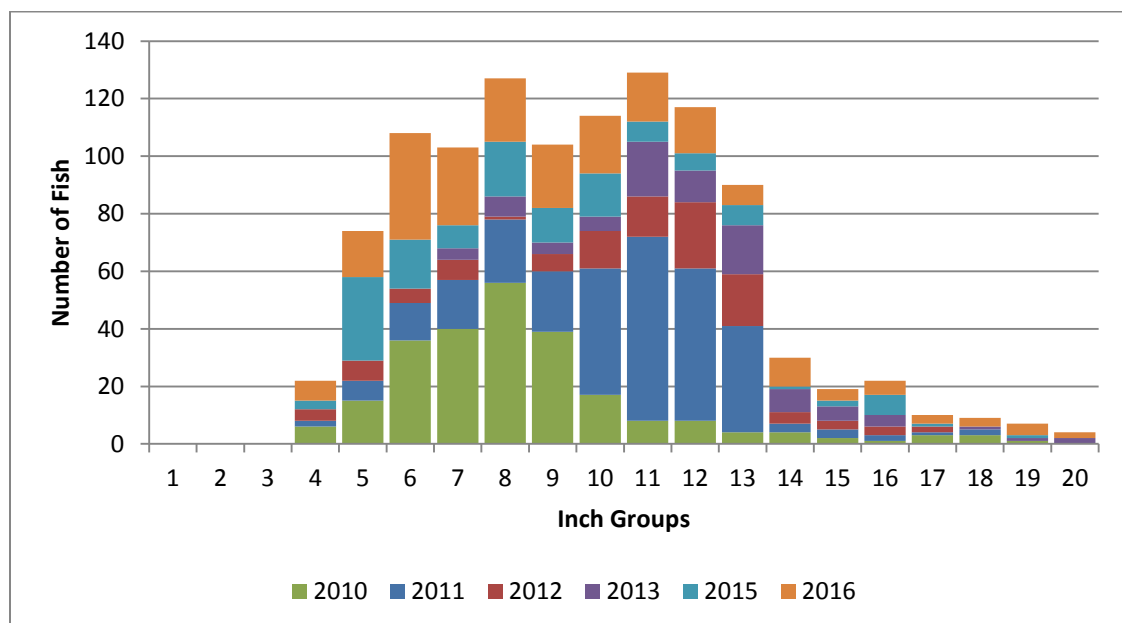


Figure 4. The size distribution (length frequencies) for largemouth bass from spring electrofishing results in the Lake Verret, Grassy Lake and Lake Palourde complex, LA, from 2010 to 2016.

LMB stocking and genetics

Over 1.2 million Florida bass (*M. floridanus*) have been stocked into the Lake Verret, Grassy Lake and Lake Palourde complex since 1995 (Table 1). Stocking of Florida largemouth bass fingerlings began in the aftermath of Hurricane Andrew. Five years later (1998), according to news reports, some large bass were harvested by anglers in this area. The largest bass reported weighed almost 12 pounds. Though some stocked Florida bass do survive and grow to large size, genetic testing of largemouth bass stocks from 1995 to 2010 indicated that the Lake Verret, Grassy Lake and Lake Palourde complex is not a good candidate for stocking of Florida bass. Fewer than 11% of bass sampled had evidence of the Florida genome during any year tested (Table 2). High CPUE's following hurricanes (Figure 1), along with genetic results, indicate that the native largemouth bass population rapidly recovers from the frequent and extensive fish kills. Competition from the resilient native bass population is suspected as the primary contributor to the poor success of Florida bass introductions.

Table 1. Historical Florida largemouth bass stockings into the Lake Verret, Grassy Lake and Lake Palourde complex, LA from 1997 – 2011.

FLORIDA LARGEMOUTH BASS STOCKING (VERRET, GRASSY, PALOURDE COMBINED)			
YEAR	FRY	FINGERLINGS	PHASE II
1997	10,000		
2000		149,275	
2001		140,346	
2002		160,433	
2003		154,162	
2004		145,965	
2005		150,895	
2006		102,339	
2007		143,684	
2008		97,968	
2009			4,396
2010		4,080	
2011			990
TOTALS	10,000	1,249,147	5,386

Table 2. Results of genetic testing of the largemouth bass populations from the Lake Verret, Grassy Lake and Lake Palourde complex, LA, from 1995 to 2016.

GENETICS (VERRET, GRASSY, PALOURDE COMBINED)					
Year	Number	Northern	Florida	F1-Fx Hybrids	Florida Influence
1995	54	96%	0%	4%	4%
1997	50	96%	0%	4%	4%
1999	118	93%	0%	7%	7%
2001	153	93%	1%	6%	7%
2003	46	98%	0%	2%	2%

2006	86	91%	1%	8%	9%
2007	102	93%	0%	7%	7%
2008	38	89%	0%	11%	11%
2009	112	90%	0%	10%	10%
2010	310	90%	0%	10%	10%
2015	71	96%	0%	4%	4%
2016	151	94%	0%	6%	6%

Forage

Forage availability is measured directly through electrofishing and shoreline seine sampling and indirectly through measurement of largemouth bass body condition or relative weight. Relative weight (Wr) is the ratio of a fish's weight to the weight of a "standard" fish of the same length. The index is calculated by dividing the weight of a fish by the standard weight for its length, and multiplying the quotient by 100. Largemouth bass Wr below 80 indicate a potential problem with forage availability. Relative weights of largemouth bass caught in the Lake Verret, Grassy Lake and Lake Palourde complex, LA ranged from 95 to 112 from 2004 to 2012 for all stock length-size and larger fish, indicating an adequate forage base (Figure 4). This high Wr suggests that there is ample forage available for bass production.

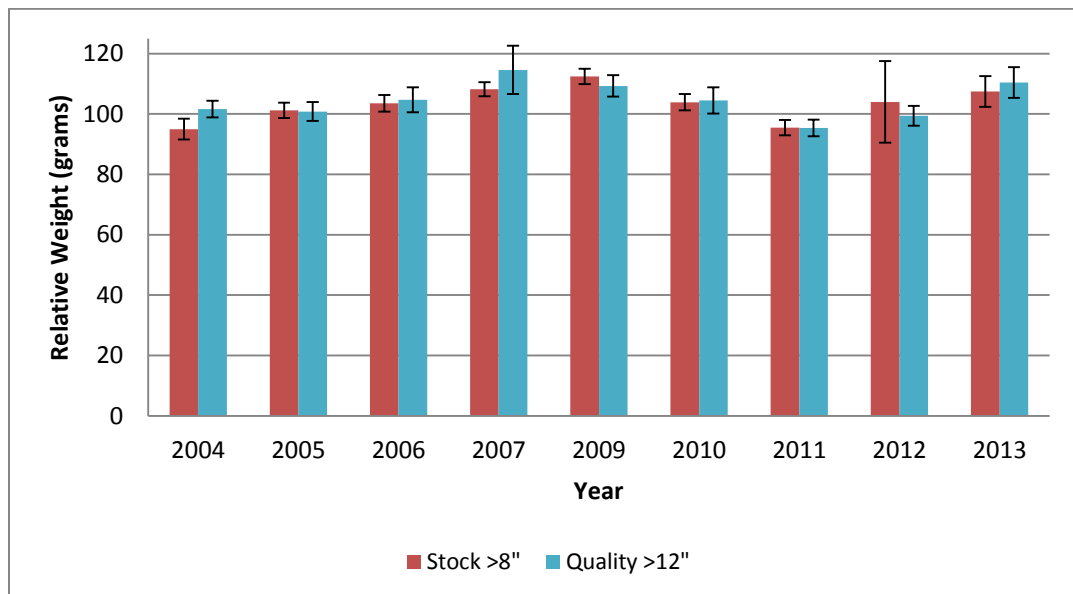


Figure 5. Mean relative weights (\pm 95% CI) for largemouth bass collected in fall electrofishing samples from the Lake Verret, Grassy Lake and Lake Palourde complex, LA, from 2004 to 2013. Error bars represent 95% confidence limits of the mean relative weights.

Electrofishing samples from fall 2012 showed that the available forage consisted of bluegill, redear, longear and warmouth sunfishes, along with golden shiners, bay anchovy, striped mullet and inland silverside (Figure 5).

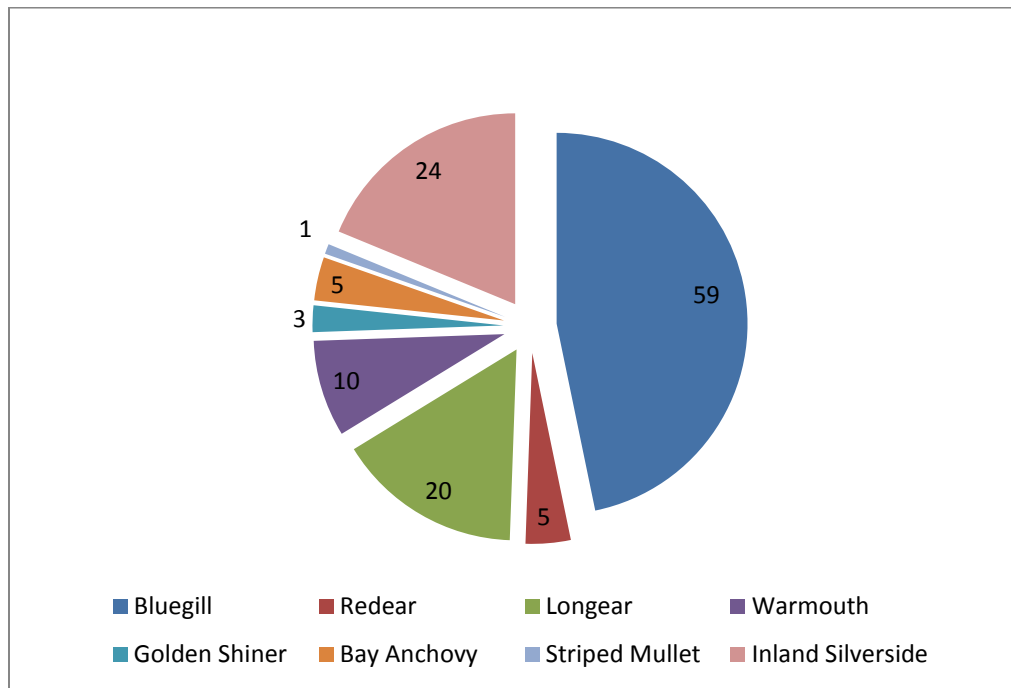


Figure 6. Forage composition in total numbers by species collected in fall electrofishing samples in 2012 from the Lake Verret, Grassy Lake and Lake Palourde complex, LA.

Crappie

Relative abundance and size distribution-

The crappie population in the Lake Verret complex is predominately black crappie. Black crappie fall electrofishing samples have ranged from 16 to 179 mean CPUE (catch per hour) in the years 1991, 1992, 1995, 1996, 1997, 1999, 2001, 2004, 2005, 2006, 2007, 2009 and 2011 (Figure 6). The lowest CPUE was recorded in 1992 following Hurricane Andrew.

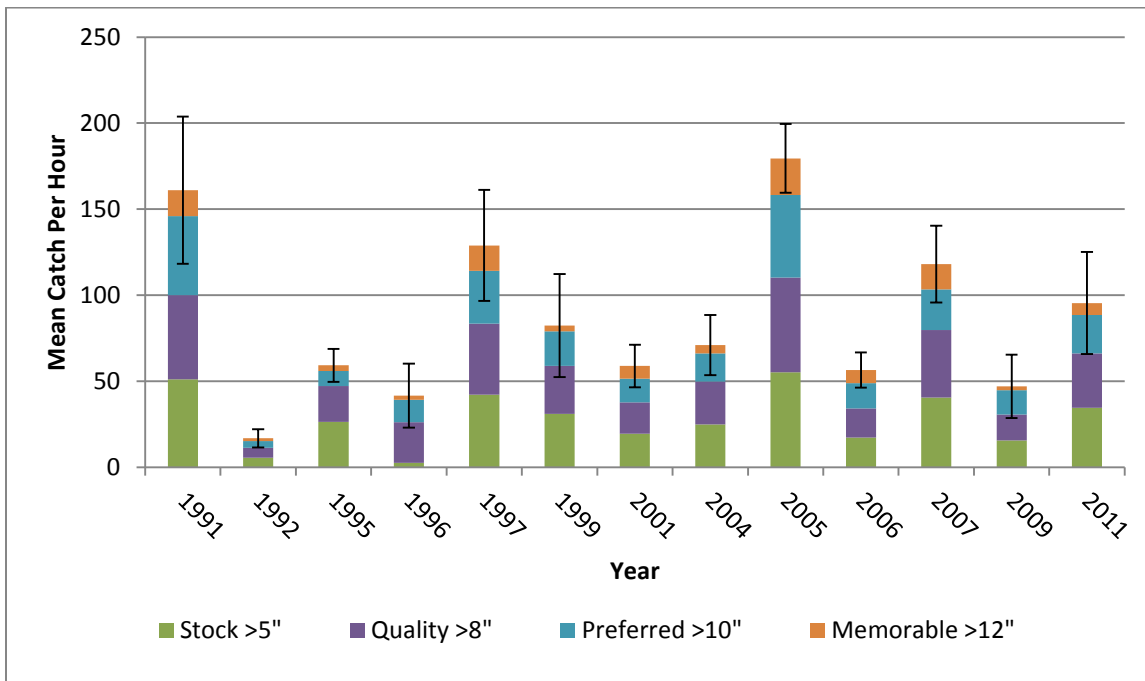


Figure 7. The mean CPUE (\pm 95% CI) from fall electrofishing results for stock-, quality-, preferred-, and memorable size black crappie in the Lake Verret, Grassy Lake and Lake Palourde complex, LA, in the years 1991, 1992, 1995, 1996, 1997, 1999, 2001, 2004, 2005, 2006, 2007, 2009 and 2011. Error bars represent 95% confidence limits of the mean total CPUE.

The size distribution comparison (length frequencies) from 2010 and 2011 fall electrofishing results indicate that in 2010 there were more stock-sized and quality-sized fish inch groups present than in 2011 (Figure 7). Length frequencies from 2010 and 2011 also indicate that a majority of the fish collected are in the 8, 9 and 10 inch groups.

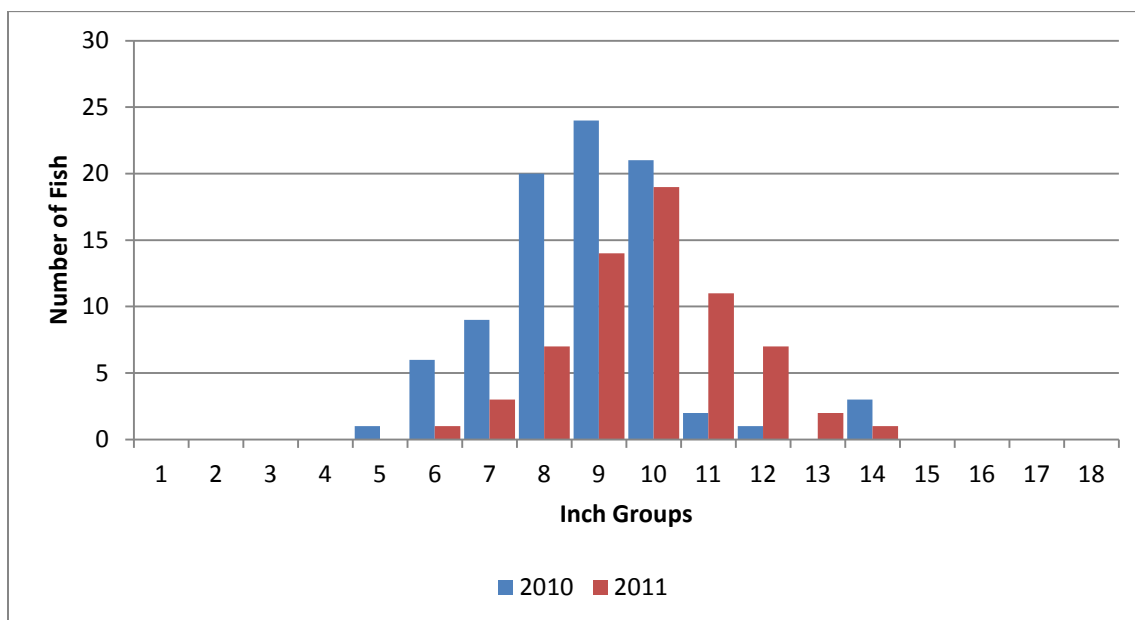


Figure 8. The size distribution (length frequencies) for black crappie from fall electrofishing results in the Lake Verret, Grassy Lake and Lake Palourde complex, LA, from 2010 and 2011.

Commercial

Populations of commercially important fish species in the complex have been managed with length limits for many years. Spawning potential fish are protected at the length for which 50% of the population has an opportunity to spawn at least once. A LDWF study in 1992 indicated that the channel catfish minimum length limit was larger than the 50% maturity level. However, the population remains healthy and abundant. Channel catfish and blue catfish are the primary target for recreational and commercial anglers.

Currently, commercial fish species are sampled by the use of gill nets. In Table 3 below, blue catfish, smallmouth buffalo and common carp are the most represented species in terms of poundage captured from 2008 to 2012.

Table 3. Gill net catches per net night (100 feet of net fished for 1 night) in pounds for selected commercial fish species from the Lake Verret, Grassy Lake and Lake Palourde complex, LA.

GILL NET CATCHES (VERRET, GRASSY, PALOURDE COMBINED)					
Species	08/09	09/10	10/11	11/12	14/15
Channel catfish	0.01	0.64	0.0	0.0	0.0
Blue catfish	25.80	23.63	16.47	11.69	11.84
Flathead catfish	2.62	0.39	1.29	1.62	0.0
Bigmouth buffalo	0.0	1.67	4.10	8.23	0.0
Smallmouth buffalo	23.08	13.32	28.27	19.40	13.47
Common carp	33.21	37.18	12.47	20.41	9.71
Gizzard shad	19.37	7.17	5.76	2.36	22.58
Skipjack herring	0.0	0.41	0.22	0.15	0.0
Freshwater drum	0.76	3.77	0.41	0.08	0.0
Bowfin	1.31	4.37	0.0	1.00	0.0
Spotted gar	1.05	2.3	0.0	2.49	0.42
Total:	107.21	94.85	68.99	67.43	58.02

Species of Special Concern

Paddlefish (*Polyodon spathula*) are present in the system.

HABITAT EVALUATION

AQUATIC VEGETATION

Complaints related to vegetation are not frequent for Verret, Grassy, and Palourde. Occasionally, back canals get a fringe of water hyacinth as well as some submerged vegetation. Each year the lakes get trace amounts of submerged, emergent, and floating vegetation. Hurricanes and tropical storms that deposit large amounts of rainfall in the area can cause large rafts of floating plants to be flushed into the system from connecting bayous to the north, as evidenced following Hurricane Isaac in 2012.

In the past, the U.S. Army Corps of Engineers (USACE) has been responsible for vegetation control in this area. However, USACE only sprayed aquatic vegetation that was impeding navigation. Effective October 1, 2011, USACE discontinued aquatic plant control activities in this area. LDWF has assumed the responsibility.

Type map

Type mapping was conducted in the fall months of 2005 and 2006.
SEE management plan MP-A, APPENDIX V – TYPE MAPS

Biomass

No biomass sampling conducted to date.

Past control measures

USACE has historically sprayed this area when navigation problems became evident.

Two isolated camp canals off of Bayou Corne were treated for dense submerged and emergent vegetation in July of 2011. Bayou Corne is located north of Lake Verret. It flows into Grand Bayou. Grand Bayou flows into Lake Verret. The application was in response to the first public complaint in the area and was likely an isolated situation where the plants did not reach an unmanageable level until recently.

20 ounces of liquid Sonar AS were used to treat an area of 3 acres.

10 ounces of liquid Sonar AS were applied a month later to the same area.

Species present:

Mexican Water lily (*Nymphaea mexicana*)

Coontail (*Ceratophyllum demersum*)

Fanwort (*Cabomba caroliniana*)

Filamentous algae (*Pithophora* spp.)

Common Salvinia (*Salvinia minima*)

Results were excellent: 90% kill of all vegetation present.

In 2015, a contract herbicide application was utilized in the Grassy Lake and Lake Palourde areas. Specifically, applications were made in the Grassy Lake - Bayou Sherman and Bay Sherman areas, and in the Lake Palourde - Bayou Cheramie areas, and adjacent canal systems. Alligator weed and water hyacinth were the focus of the herbicide application. Because these two plant species were found in combination, Polaris AQ (imazapyr) was utilized in the treatment area. The application proved to be effective with little regrowth in the area for the remainder of the growing season.

Table 4. Acres of vegetation treated in the Verret, Grassy, and Palourde Lake areas, for 2012-2015.

Acres of vegetation treated in the Lake Verret/Grassy Lake/Lake Palourde areas, for 2012-2015			
	Lake Verret	Grassy Lake	Lake Palourde
2012	73	-	-
2013	410	-	240
2014	-	-	-
2015	-	160	160

Aquatic Vegetation Status:

Lake Verret, including the Grand Bayou/Bay Alcide areas as of December 21, 2015 –

Problematic Species:

Water hyacinth (*Eichhornia crassipes*) – 30 acres
Common salvinia (*Salvinia minima*) – 30 acres
Giant salvinia (*Salvinia molesta*) – 10 acres
Hydrilla (*Hydrilla verticillata*) – 50 acres
Alligator weed (*Alternanthera philoxeroides*) – 20 acres
Cuban bulrush (*Oxycaryum cubense*) – 15 acres
Primrose (*Ludwigia spp.*) – 20 acres

Beneficial Species:

Coontail (*Ceratophyllum demersum*) – 50 acres
Fanwort (*Cabomba caroliniana*) – 25 acres
American lotus (*Nelumbo lutea*) – 40 acres (in summer)

Grassy Lake as of December 21, 2015 -

Problematic Species:

Water hyacinth (*Eichhornia crassipes*) – <5 acres
Common salvinia (*Salvinia minima*) – <5 acres
Hydrilla (*Hydrilla verticillata*) – <5 acres
Alligator weed (*Alternanthera philoxeroides*) – <5 acres

Beneficial Species:

Coontail (*Ceratophyllum demersum*) – <5 acres
Fanwort (*Cabomba caroliniana*) – <5 acres
American lotus (*Nelumbo lutea*) – 10 acres (in summer)

Lake Palourde, including the Bayou Cheraimie/Sherman areas as of December 21, 2015 -

Problematic Species:

Water hyacinth (*Eichhornia crassipes*) – 30 acres
Common salvinia (*Salvinia minima*) – 50 acres
Hydrilla (*Hydrilla verticillata*) – 40 acres
Alligator weed (*Alternanthera philoxeroides*) – 20 acres
Cuban bulrush (*Oxycaryum cubense*) – 15 acres
Primrose (*Ludwigia spp.*) – 20 acres

Beneficial Species:

Coontail (*Ceratophyllum demersum*) – 30 acres
Fanwort (*Cabomba caroliniana*) – 20 acres
American lotus (*Nelumbo lutea*) – 20 acres (in summer)

Substrate

Substrate for Verret, Grassy, and Palourde mostly consist of soft sediments in the interiors. Some points remain scoured and exhibit a hard clay bottom. Fossil clam shells (*Rangia* spp.) form a component of this type of bottom. Another significant component of the substrate is the numerous fallen trees adjacent to the tree line resulting from the receding edge of the lakes due to erosion and subsidence. This combination of structure and substrate near the shore has contributed to the continued production of sunfish and catfish populations in these lakes.

CONDITION IMBALANCE / PROBLEM

The continued and excessive deposition of sediment from the surrounding watershed is degrading fisheries habitat in these lakes. The conversion of thousands of acres of bottom land hardwoods and cypress tupelo swamps to urban and agricultural use has accelerated the accretion process of these natural bodies of water. Nutrient loading is also increasing eutrophication in the complex. Species composition is expected to change in favor of buffalo, carp, shad, and gar. Recreational fish abundance will decrease as habitat is degraded.

CORRECTIVE ACTION NEEDED

1. Change current land use practices to reduce erosion and sedimentation.
2. Shunt the runoff from the drainage canals to flow through the cypress-tupelo swamps as a sheet flow to filter nutrients and sediment.

RECOMMENDATIONS

Landowners and other pertinent agencies, NGO's, or cooperative interests must recognize the importance of the fishery that exists in this complex and mandate some sediment management practices for the surrounding area. For the intermediary time, the following management practices are recommended.

1. Continue standardized sampling of fish populations to monitor the condition of the stock. This includes evaluating possible changes in the largemouth bass population due to a recent change in regulations.
2. Stocking of Florida largemouth bass should not be continued in this complex. High sampling CPUE following hurricanes, along with genetic results, indicate that the native largemouth bass population recovers naturally and that the incorporation of the Florida gene into the population is low.
3. There has been no need for additional regulation of the bream or crappie population in this complex. The population has remained stable and there are no requests for management goals other than maximum sustained yield.
4. The catfish population has shown to be viable and self-supporting at the present levels of management. There is no reason at this time to make changes in the management practices concerning the catfish populations in the complex.
5. These lakes and the surrounding areas will be assessed monthly during the growing season for nuisance aquatic plant infestations. Public complaints will receive a timely response. Problem areas will be treated as they arise with foliar applications of the appropriate herbicide as per the approved Aquatic Herbicide Application Procedures. Contractor spraying may be employed if deemed necessary by District 7 and Aquatic Plant Control personnel.